PUBLIC HEALTH REPORT

Louis F. Saylor, M.D., M.P.H., Director, State Department of Public Health

Immunization and Health Information for International Travel

THE COMMUNICABLE DISEASES to which persons may be exposed while traveling abroad vary with the countries in which they stay or through which they pass, the duration of their journey or stay and the occurrence of local or seasonal epidemics. The risk can be readily circumvented by immunization in many instances. Some immunizations are required to enter or reenter a country (smallpox, cholera, yellow fever), while others are only recommended but not required for entry or reentry.

This report deals with recommended immunizations. The diseases which are reviewed here often pose a more serious threat to the traveler's health and enjoyment of his journey than the quarantinable diseases. Travelers should give serious consideration to these recommended immunizations and preventive measures in preparing for a trip abroad. Some of the recommendations apply to all overseas travel while others are indicated only in specific situations. The recommended immunizations are based on information obtained from the Public Health Service Advisory Committee on Immunization Practices and the American Academy of Pediatrics and are offered for the traveler's protection.

Travelers' Diarrhea. Diarrhea is probably the most common disease of travelers, yet the cause remains an enigma. Though travelers' diarrhea is known the world over, it is clearly more prevalent in tropical and subtropical areas, where it seems related to poor sanitation and hygiene.

What precautions can be recommended for the traveler? Water is usually safe in larger cities and at hotels accustomed to international travelers. If water is of questionable safety for drinking, use of the same water for making ice or for brushing teeth presents an equal hazard. If there are any doubts about the safety of the water, one should consider using bottled water or water from the hot water tap, provided that the water is sufficiently hot so that the hand must be withdrawn. Foods may present special hazards in certain areas of the world, particularly raw fruit and vegetables, dairy products, and raw shellfish.

As for chemoprophylaxis for travelers' diarrhea, there is no unanimity of opinion. Nor is there good evidence to support the use of antibacterial agents although Entero-vioform® has been used successfully to prevent such gastrointestinal disease as amebiasis and possibly shigellosis in mental institutions. At present, no chemoprophylaxis is routinely recommended for travelers.

For symptomatic treatment of nonspecific travelers' diarrhea, physicians might consider providing paregoric, Lomotil® (diphenoxylate), or Kaopectate® (kaolin-pectin) for their traveling patients.

Until the cause or causes of this disease entity are better defined, "turista" will continue to be an uninvited companion of many travelers.

Tetanus and Diphtheria. Tetanus and diphtheria are ubiquitous. No areas of the world are free of these frequently fatal infections. The

usual schedule recommended by the American Academy of Pediatrics or the Public Health Service Advisory Committee on Immunization Practices provides adequate protection for children. Adults should receive booster doses of tetanus-diphtheria toxoid (adult type) every 10 years.

Poliomyelitis. The incidence of poliomyelitis has been greatly reduced in the United States, Australia, New Zealand, Canada and Western Europe in recent years but remains a major problem in most other countries of the world. Adequate immunization is strongly recommended for all international travel. Although the need for an additional single dose of trivalent oral poliovirus vaccine (OPV) has not been established, children who have completed the accepted primary course of OPV should receive a single booster dose. Adults who received fewer than two doses of OPV should have two doses, six to eight weeks apart before departure. Adults who have had two or three doses of OPV should receive a single dose. This latter booster need never be repeated for subsequent travel.

Measles (Rubeola or Eight-Day Measles). For children who have not had measles nor have been vaccinated against measles, measles vaccine is recommended.

Typhoid Fever. Typhoid vaccine is not recommended for travelers who stay at the usual tourist accommodations in most European and Caribbean countries. Immunization is advised for travelers going to areas where typhoid is currently an epidemic or endemic problem (Central America, South America, Africa, Asia, the Middle East and the Pacific Region).

Plague. Routine immunization is not indicated for tourists going to countries reporting human or animal infections. Immunization is advisable for all persons traveling to Vietnam, Cambodia and Laos. Persons whose occupations or field work brings them into frequent or regular contact with wild rodents in enzootic areas in South America, Africa or Asia should also receive the vaccine. Booster doses should be given every six to 12 months for as long as opportunity for exposure exists.

Typhus fever. The rarity of epidemic louseborne typhus minimizes the need for immunization. The disease presently is found only in rural or remote highland areas of Ethiopia, Rwanda, Burundi, Mexico, Bolivia, Ecuador, Peru and mountainous areas of Asia. Even there, however, the risk of typhus for United States travelers is extremely low. Immunization against typhus is not required by any country as a condition for entry. Typhus immunization is suggested only for such persons as scientific investigators, oil field and construction workers, missionaries and some government workers who live in or visit areas where the disease actually occurs or who will be in close contact with the indigenous population in such areas. Booster doses should be given at intervals of six to twelve months for as long as the opportunity for exposure exists.

Rabies. Preexposure rabies prophylaxis is not recommended for tourists. However, persons (especially children) living in areas where rabies is a constant threat (Africa, Asia and parts of South and Central America) should be considered for preexposure rabies prophylaxis. Duck embryo rabies vaccine is the agent of choice.

Influenza. Routine use of influenza vaccine is not recommended. During epidemic years its use may be considered, especially for travelers with chronic debilitating conditions such as congenital and rheumatic heart disease; cardiovascular disorders, particularly with evidence of cardiac insufficiency; chronic broncho-pulmonary disease, and chronic metabolic disorders such as diabetes mellitus. Candidates for influenza vaccine who have had severe or local systemic reactions to the vaccine in the past may experience less discomfort if the newly available highly purified vaccine is used.

Infectious Hepatitis. A vaccine for immunization against infectious hepatitis is not available, but passive immunization with immune serum globulin (ISG) is effective for temporary prophylaxis against infectious hepatitis.

The risk of infectious hepatitis for United States residents traveling abroad varies with living conditions and the prevalence of hepatitis in the areas to be visited. Travelers may be at no greater risk than in the United States when their travel involves ordinary tourist activities and little exposure to uncooked foods or water of uncertain quality. For these travelers, ISG is not recommended.

For travelers visiting areas where hepatitis is a major health problem who may be exposed to infected persons and to contaminated food and water, there is increased risk of acquiring hepatitis. A single dose of ISG is recommended. A

simplified dosage guideline is: up to 50 pounds, 0.5 ml; between 50 and 100 pounds, 1.0 ml; and over 100 pounds, 2.0 ml. For extended travel (greater than two months) doubling the dose is recommended with repeat administration every six months for those residing in endemic areas.

Malaria. Malaria remains a highly prevalent and serious endemic disease in many tropical and subtropical countries. In recent years a number of United States travelers have acquired malaria while traveling abroad because they have not received adequate chemoprophylaxis. Endemic areas where prophylaxis may be needed include Africa; Haiti; Central America; the Southern West Coast Region and Southern States of Mexico; South America with the exception of Venezuela, Chile and Argentina; the Southern Middle East; Southeast Asia, Korea and some islands of the Western Pacific Region.

Although drug prophylaxis is usually recommended for persons residing in or traveling through countries in which malaria occurs, it should be recognized that the risk of malaria is not necessarily uniform throughout an entire country, and that local conditions to a large extent dictate the need for medication. The traveler's itinerary should be reviewed to determine whether it will take him into areas in which preventive measures are needed. The risk of life threatening Plasmodium falciparum malaria is especially high in both urban and rural areas of tropical Africa.

Chloroquine phosphate (Aralen®) is the drug recommended for general use as a chemosuppressive. In the United States it is available in 250 mg tablets. The adult dosage is two tablets (500 mg) once a week starting the week before possible exposure. Suppression should be continued at this dosage throughout the time spent in malarious areas, and for six weeks thereafter.

The regimen described above will provide complete protection against Plasmodium falciparum, with the exception of those strains in Southeast Asia and South America which are chloroquine-resistant. Infections caused by P. vivax, P. malariae, and P. ovale (relapsing species) are not prevented, but the symptoms are suppressed.

Primaquine phosphate is the drug used for radical cure of relapsing species of malaria. The adult dosage is 26.3 mg (15 mg base) daily for 14 days following return from a malarious area. The routine use of primaquine for all civilians who have been in a malaria endemic area is questionable. Intensity of exposure to relapsing species should determine its use. Primaquine may cause hemolysis in persons with glucose-6-phosphate dehydrogenase deficiency.

Alternate malaria suppressive drugs are listed in the *Control of Communicable Diseases in Man,* eleventh edition 1970, American Public Health Association. A pediatric dosage schedule for chloroquine phosphate can be found in the *Report of the Committee on Infectious Diseases 1970* ("Red Book") published by the American Academy of Pediatrics.

In addition to malaria chemoprophylaxis other common protective measures such as use of insect repellant, screening of doors and windows, and avoiding mosquito exposure at times of prime biting activity (dawn and dusk) should be stressed.

African Sleeping Sickness (Trypanosomiasis). During 1970, two imported cases of African trypanosomiasis (Rhodesiense) occurred in Californians. They had visited game parks in Rwanda and Botswana where they were severely bitten by tsetse flies (Glossina) shortly before onset of illness. Several other cases with similar African travel histories were reported from other areas in the United States during 1969 and 1970. Increasing tourism to trypanosomiasis endemic regions in West and East Africa portends additional cases in the future. No vaccine or practical means of chemoprophylaxis are available for protection of the traveler facing exposure to the tsetse fly vector. If exposure to biting tsetse flies in endemic trypanosomiasis areas cannot be avoided, the traveler should wear heavy protective clothing with long sleeves and long trousers and make use of helmets with mosquito netting attached for protection of the head and neck. Use of insect repellant may also be helpful.

All infectious diseases acquired by persons traveling abroad should be reported to the health department. Through such reporting, public health authorities will be aided in providing current and correct health information to guide and protect international travelers in their journeys.